Issued October 12, 1910.

U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF SOILS—MILTON WHITNEY, Chief.

SOIL SURVEY OF ANDERSON COUNTY, SOUTH CAROLINA.

BY

W. E. McLENDON.

[Advance Sheets—Field Operations of the Bureau of Soils, 1909.]

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1910.

[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the Congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., June 6, 1910.

SIR: The accompanying report and soil map cover the survey of Anderson County, S. C., one of the projects undertaken by the Bureau during the field season of 1909. This work was undertaken upon the request of prominent citizens of the county and bore the indorsement of the Hon. Wyatt Aiken, within whose district the area lies.

I recommend the publication of this report as advance sheets of Field Operations of the Bureau of Soils for 1909, as provided by law.

Very respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. JAMES WILSON,
Secretary of Agriculture.

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SOIL SURVEY OF ANDERSON COUNTY, SOUTH CAROLINA.

By W. E. McLENDON.

DESCRIPTION OF THE AREA.

Anderson County, with an area of 446,080 acres, or 697 square miles, is situated in the upper Piedmont section of South Carolina, near the northwestern corner of the State. It is included within parallels 34° 20′ and 34° 50′ north latitude and meridians 82° 20′ and 83° west longitude. Its shape is roughly a square with the corners

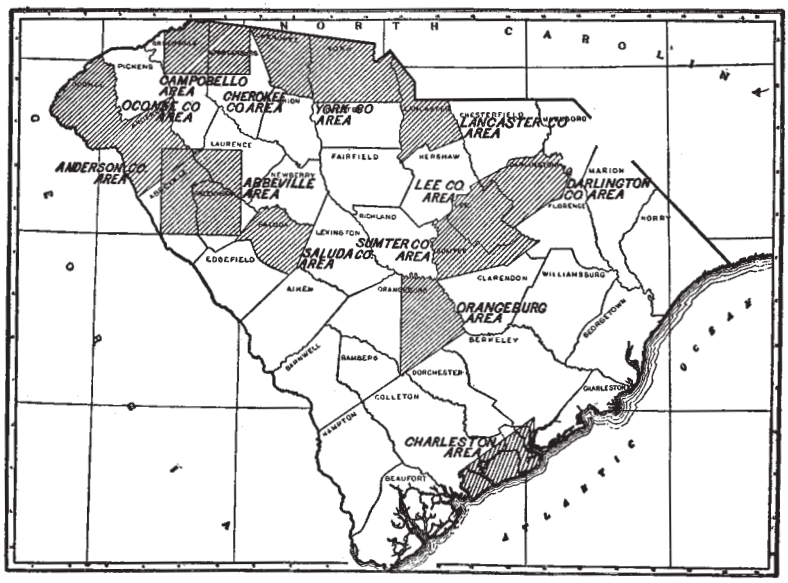

FIG. 1.—Sketch map showing location of the Anderson County area, South Carolina.

turned toward the cardinal points of the compass. The northwestern boundary is formed by the Saluda River, immediately beyond which is Greenville County. On the southeast it is bounded by Abbeville County, on the southwest by the Tugaloo and Savannah rivers, which form the South Carolina-Georgia state line, and on the northwest by Oconee and Pickens counties.

The characteristic rolling topography of the Piedmont is well developed throughout the county, the general altitude ranging from

750 to 1,000 feet above sea level. From the northern end of the county there is a gradual slope to the southeast in the general direction of the main courses of drainage. The high altitude has caused the development of an intricate system of rapid-flowing streams, which have carved out deep, narrow valleys with little or no overflow lands. The main streams have many tributaries, and these in turn are fed by radiating systems of spring branches rising near the crests of the ridges. The differences in elevation between the valleys and adjacent ridges range from 50 to 250 feet, depending upon the size of the streams. Where the streams are most frequent the topography is generally quite rolling, but along the crests of the wider drainage divides there are some comparatively level areas, although hardly an acre is perfectly level. In places the streams are bordered by abrupt slopes, some of which are too rough to be farmed successfully, while in other places they may be bordered by gentle slopes extending back to the crests of the ridges. Some of the most broken areas are found along the Seneca, Tugaloo, and Savannah rivers, extending back as far as the headwaters of the small lateral streams. Similar areas occur along the Saluda River and in places along some of the larger creeks. The leveler areas coincide very closely with the sandiest sections of the county. Viewed in a panoramic way, the only abrupt feature in the landscape is Little Mountain, some 6 miles south of the center of the county, which is a small prominence rising 100 to 200 feet above the surrounding country.

The drainage of the county is largely to the south into the Savannah River, through its numerous tributaries. The northern end and a narrow strip along the northwestern edge on around to the Abbeville county line are drained by the Saluda River. The main tributaries of the Saluda River are Big Brushy, Hurricane, Big, and Broad Mouth creeks. All of these are short creeks except Big Brushy, which rises in Pickens County. The Tugaloo and Seneca rivers unite to form the Savannah River about 7 miles from the western corner. Beaverdam and Little Beaverdam creeks are tributaries of the Tugaloo, coming in from Oconee County. Eighteen Mile, Twenty-Three Mile, and Twenty-Six Mile creeks are important tributaries of the Seneca River. The last two of these rise well toward the northern end of the county and flow in a general southwesterly direction, paralleling each other until within about 2 miles of the river, where they come together to form Deep Creek. The south-central portion of the county is drained by Big Geneostee and Little Geneostee creeks, which flow south into the Savannah. The north-central and the southeast portions of the county are drained by Rocky River and its tributaries and the upper tributaries of Little River. Excellent sites for power plants occur at various points along the rivers and larger creeks. There are five large electric plants now in operation

in and adjoining Anderson County. One of these is on the Seneca River at Portman Shoals and the other four are on the Saluda River. Sufficient power for grist and flour mills and other small commercial enterprises can be developed in many places along the larger creeks.

Settlement in the northwestern part of the State was slow and very much hampered by the Indians until after the Revolutionary war. Then immigration began anew and it was not long before the section was fairly well settled, especially the territory now embraced by Anderson County. One of the main centers of development was around Pendleton village, which was made the seat of government for the old Pendleton district. The settlers were mostly from the lower part of the State and Virginia. The Pendleton district was first divided into Anderson and Pickens counties and later (1868) by constitutional act old Pickens County was further divided into the present counties of Oconee and Pickens. As a result of the large number of slaves in the county prior to the civil war a large percentage of the present population consists of negroes. The whites are mostly direct descendants of the early settlers, and about the only outside element of any consequence settling in the county is made up of the cotton-mill hands who come mostly from the mountainous districts of South Carolina, North Carolina, and Tennessee. The total population of the county in 1900 was 55,728. Anderson, with a population of about 12,000, is the county seat.

Anderson County has an extensive system of public roads. The majority of them are clay and work up rather badly in places during the cold, wet weather of the winter months, but during the summer they stay in good condition. The ridge roads are best, because the grades are easy, and fortunately wherever possible the roads have been made to follow the ridges or drainage divides. Some of those crossing streams have grades too steep to allow heavy hauling. In places this difficulty has been largely overcome by changing the road bed so as to get an easy grade, and it is expected that as traffic demands it others of the worst grades will be looked after. The rural free delivery service is maintained over practically all of the public and some of the better private roads.

The railroad facilities are fairly good, but not adequate for the best development of the county. The Greenville and Columbia branch of the Southern Railway crosses the eastern edge of the county. From Belton, on this line, the Blue Ridge Railway extends in a westerly direction into Oconee County, connecting with the main line of the Southern at Seneca. A branch of the Charleston and Western Carolina entering from the south terminates at Anderson. The main line of the Southern between Washington and Atlanta does not enter the county, but parallels the Anderson-Pickens county line at a distance of 3 to 6 miles. In addition to these an electric road is

operated between Anderson and Belton and a proposed extension will connect these places with Williamston and Pelzer. By way of Belton, Anderson has quick service to the north and east and by way of Seneca to all points west. The remotest sections from the railroad are parts of Fork, Rock Mills, and Martin townships. The extreme western corner of the county is about 15 miles from the nearest station.

Anderson, being centrally located, is the chief marketing point for a very large part of the county. Belton, Williamston, Pelzer, Honea Path, Iva, and Pendleton are some of the smaller places, with populations ranging from 500 to about 3,000 each. Along the northwestern edge of the county considerable of the trade goes to Central, Liberty, Easley, and Greenville, on the main line of the Southern. A large proportion of the cotton crop is handled by local cotton mills. In and near Anderson are nine mills. There are three in Pelzer, two in Piedmont, and one in each of the other towns named above, besides a small one at Autun. All of the salable products of the farm usually command good prices in the local markets.

CLIMATE.

Anderson County has a mild, pleasant climate, adapted to a great variety of crops, many of which are not now being grown. The summers are long and hot, but as a rule they are not attended by oppressive sultry periods, except sometimes for a few days during the months of July and August, and then the nights are generally pleasant. The winters are very short and so mild that outdoor work can be carried on nearly every day, and no expensive housing is required for the live stock. The natural drainage is so nearly perfect that practically no annoyance is caused by mosquitoes, and the section is entirely free from malaria. The average climatic conditions are fairly well represented in the table below, which was compiled from records of a Weather Bureau station at Clemson College, 2 miles over the line in Oconee County.

Normal monthly, seasonal, and annual temperature and precipitation at Clemson College, Oconee County.

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	° *F.*	° *F.*	° *F.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
December	42	72	9	3.5	1.9	9.5	1.0
January	41	77	5	4.6	2.0	5.2	0.4
February	41	74	− 7	5.4	8.1	3.8	2.6
Winter	41	.....	.....	13.5	12.0	18.5	4.0

Normal monthly, seasonal, and annual temperature and precipitation at Clemson College, Oconee County—Continued.

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	° *F.*	° *F.*	° *F.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
March	52	82	12	4.5	2.2	6.2	T.
April	58	88	24	3.9	3.4	6.7	0.0
May	70	99	40	3.2	3.3	7.2	0.0
Spring	60			11.6	8.9	20.1	T.
June	76	100	42	5.8	5.4	7.9	0.0
July	79	101	54	5.2	1.6	2.6	0.0
August	79	102	56	4.9	2.7	13.2	0.0
Summer	78			15.9	9.7	23.7	0.0
September	72	100	38	3.9	4.2	6.8	0.0
October	62	92	25	3.1	3.9	0.3	0.0
November	51	84	10	3.2	2.0	0.8	T.
Fall	62			10.2	10.1	7.9	T.
Year	60	102	− 7	51.2	40.7	70.2	4.0

The average annual precipitation is slightly over 51 inches, which is fairly well distributed throughout the year. The heaviest rainfall occurs in February, just before spring opens, and through the three summer months, June, July, and August. The fall months are the driest, the weather being usually very favorable for gathering cotton and other crops. Occasional droughts during the growing season, especially in midsummer, do an immense amount of damage, and prolonged wet spells are equally as harmful to the crops and the soil is often badly washed and gullied. Not much can be done to prevent the harmful effects of excessive rainfall except to guard against erosion and overflows so far as possible, but the effects of droughts can be overcome in a large measure by deep, thorough preparation of the soil before planting, careful cultivation, and the exercise of care in selecting crops adapted to the different soils.

At Clemson College the average date of the last killing frost in the spring is March 31 and of the first in the fall November 4. The growing season ranges in length from seven to seven and one-half months, or some two weeks shorter than in the Coastal Plain region of the State. On the clay lands the tendency of the cotton to grow late in the fall often results in a loss of the late bolls through frost. This trouble can be in part obviated by planting an early-maturing variety especially adapted to the clay lands. The erratic occurrence of frosts in the spring makes the peach crop uncertain, and other fruits are

affected to some extent. As a whole, however, the temperature and moisture conditions are very favorable to plant growth.

AGRICULTURE.

The early settlers confined their efforts largely to the cultivation of the fertile bottom lands, as the rolling uplands were not considered of much value except for stock range. This idea grew out of the fact that many of the settlers came from leveler sections, where the problem of soil erosion was of no consequence, or because corn, the chief crop, gave much better yields on the bottom lands without much care and with little deterioration of the soil after years of cultivation. At that time the overflows were not frequent and were much less destructive than they have been since. Because of the more frequent occurrence of overflows and consequent uncertainty of crops on the bottoms much of the uplands has been brought under cultivation.

Gradually, however, settlements extended all through the uplands, many of the farms including little or no bottoms. The leveler sandy ridges were first occupied, then the more rolling tracts, where the soils were somewhat heavier. The same general preferences are still in evidence, and the best and most extensive developments are found on the moderately rolling sandy types, because they are more easily handled. The individual holdings, as a rule, were large, but the amount of land brought under cultivation depended upon the supply of labor at hand. There were a great many large and medium-sized plantations operated entirely by slave labor. The smaller farmer without slaves had to depend upon his family for most of the necessary help.

The general plan of farming in the earlier days was to produce nearly everything needed for home use. Corn, wheat, and oats were the main crops. Nearly every farmer raised enough hogs to supply pork and lard the year round. A great many raised some cattle and small herds of sheep and gave considerable attention to the raising of horses. Much of the spinning and weaving was done at home. Cotton, although grown to some extent, did not play an important part in the agriculture until after the civil war. Land being cheap and plentiful, the farmers did not give much attention to keeping the soil in a productive state by means of good tillage or any system of rotation of crops. If a field became very much run down after some years of cultivation, it was thrown out of cultivation and new land cleared to take its place. The owners of the large plantations became very wealthy, but there was no great degree of prosperity among the smaller farmers, although they kept pretty well out of debt.

As the necessity for a ready-money crop was strongly felt after the civil war, cotton was grown on an increasing scale, until it became the most important crop throughout the county. The production of

wheat and a few other crops continued, but with the increase in the acreage of cotton less and less attention was given to other lines of farming. As a result, although the soils and climatic conditions are admirably adapted to stock raising, dairying, and the growing of a great variety of forage crops, practically nothing is being done in these lines. The average farmer does not produce sufficient corn and forage to supply his own wants. Cowpeas, which thrive on all the soils and afford excellent feed and the cheapest means of improving the soil, are not grown nearly as extensively as they should be, nor do they play an important part in the rotation of crops. The whole system is that of devoting the best energies to producing cotton and subordinating all the other crops. Instead of depending upon cotton almost exclusively as the money crop and buying at a high price the necessaries that might be produced very cheaply at home, a more diversified farming will lead to better results and at the same time keep the farms in a higher state of productiveness. There has been a decided change for the better within the last twelve years, owing mainly to better prices paid for cotton. The home surroundings are being improved and better methods of farming are gradually coming into favor, although there is still room for decided improvement. The scarcity of labor could be offset to a large extent by adopting the better types of farm machinery. The greatest drawback to the agricultural development of the section is the present system of tenantry, which can not help but result in the continual deterioration of the land, which often reaches a state of worthlessness. The tenant cares nothing for the land beyond the time of actual occupancy, and this being uncertain, he takes no pains to build up the soil, or keep it in a productive state if already in good condition.

An idea of the extent of development in the county and the relative importance of the different crops can be had from the figures given in the Twelfth Census. According to this authority, in 1900 out of a total of 432,710 acres in farms, 246,933 acres, or slightly over half, were improved. The acreage of cotton was more than that of all the other crops combined, or, to be more exact, 123,992 acres were in cotton, producing 44,366 bales. There were 58,507 acres in corn, producing 596,140 bushels; 17,164 acres in wheat, producing 118,010 bushels; 8,862 acres in oats, producing 76,990 bushels; and 2,070 acres in grasses for hay, producing 2,423 tons. Between 1890 and 1900 the acreage in oats was reduced over half, but the wheat acreage was increased by about 3,000 acres. At present there is a tendency to grow more oats. Among the minor crops may be mentioned sorghum, cowpeas, rye, sweet and Irish potatoes, peanuts, and miscellaneous vegetables for home use.

The orchard products were valued at $8,036 and the forest products at $83,272. Very little fruit is grown for the market. Several peach

orchards have been set out within the last ten years, but scarcely any of them have given anything like satisfactory returns on account of the uncertainty of crops as a result of spring frosts. About all of the merchantable timber has been removed.

Cotton and corn lands are left bare during the winter months, unless followed by oats or wheat, and very little plowing is done before early spring. Where cotton follows cotton a common practice is not to plow broadcast, but to run center furrows between the old rows, apply the fertilizer, and bed with four furrows. The stalks are broken down with a stalk chopper or with a stick and the roots are then plowed out. If cotton follows corn or some other crop the land may be broken broadcast before the rows are laid off. Most of the after cultivation is done with sweeps and scrapes of various widths, which require three trips to the row to complete a cultivation. The crop is laid by in July and early August, while the plants generally are growing and fruiting rapidly. Cultivation is done more with the idea of keeping down grasses and weeds than to conserve moisture. Shallow cultivation through the middles, so as to keep the soil exposed to the sun's rays properly mulched, would prove very beneficial as long as the plants are setting fruit.

Lands intended for cotton should be given a deep breaking during the winter or early spring and the beds should be made very low, so that the cotton can be given practically level cultivation. The crop would stand droughts better and less hoeing would be necessary. In late fall a good plan would be to sow rye broadcast over the cotton fields to act as a cover crop and to afford pasturage during the winter months. More attention should be given to the selecting of varieties of cotton best adapted to the different soils. What is best suited to a loamy moist soil is rarely equally as well suited to the drier rolling uplands, where the habits of growth are necessarily different. The crop has a tendency to mature later on clay than on sandy lands. This suggests the advisability of an early maturing variety for the clay lands. Every farmer should practice seed selection in his own field, as in this way he can get a cotton peculiarly adapted to his soils and climatic conditions. It is rarely a safe plan to buy seed at any distance, where the soils and climatic conditions may be entirely different from those of the region in which the seed is to be planted.

The methods of planting and cultivating corn are quite variable and do not apply to any particular type of soil, but in all of them there is a general lack of thoroughness which in most cases means a poor crop. The upland soils generally used for corn culture ought to yield on an average about 30 bushels per acre, but the general average for these lands is less than 15 bushels, although a great many of the farmers make light applications of commercial fertilizers.

The planting is done on level ground or on low flat beds. The rows are from 4 to 5 feet apart and the hills from 2 to 3 feet. Usually not more than one plant in the hill is allowed to stand. The uplands being dry the furrow method is more generally practiced. This system gives the plants a deeper root development, which is very desirable during dry seasons, and makes it easier to keep down grasses and weeds between the plants without the use of the hoe. Cultivation is done with scooters, light turning plows, sweeps, etc., which require several trips to the row to complete a single cultivation. Much time and labor would be saved by using a cultivator. In their use, however, it is necessary that the soil be thoroughly prepared before the crop is planted. The tendency is to plant the crop and try to prepare the land afterwards. A great many injure their crops by cultivating too deep, especially in laying by with a turning plow and cutting off practically all of the feeding roots of the plant. In the practice of "pulling the fodder" the farmers lose more corn than the fodder is worth. By actual observation it has been found that a loss of 15 to 18 per cent in the weight of the corn is caused in this way.

It is becoming a common practice to plant oats in the cotton before all of the crop is gathered in the fall. The planting is generally done with a light planter or some of the fertilizer distributers used, putting three to four rows in each cotton middle. After the cotton has been cultivated all the summer the soil is in condition to receive the seed without further preparation and fairly good crops are secured. One of the main difficulties is in getting rid of the cotton stalks, so as not to be in the way of the reaper. Some go to the trouble of cutting them down with the hoe. Others run a stalk chopper over them, but this leaves many sticking up. A stalk chopper with about double the ordinary number of blades and heavily weighted would do the work much more satisfactorily. Oats and wheat give the most satisfactory yields where they follow corn and peas in systematic rotation.

Large quantities of commercial fertilizers are used, and more is being used every year. In 1900 the expenditures for this purpose amounted to $250,750. Fertilizer is also coming into general use for corn on the uplands. For cotton the application ranges from 150 to 600 pounds an acre, a few using as much as 800 to 1,000 pounds, with apparently good results. It is doubtful if the heavy applications will give satisfactory results unless the soil is kept well supplied with humus and is prepared deeply, so as to allow an extensive root development. There is a general lack of knowledge as to the manurial requirements of the soils, except that they respond in a greater or less degree to any fertilizer. The soils in general give less response to potash than to nitrogen or phosphorus. As the

clay comes nearer the surface less potash fertilizer is required. As a matter of economy, it pays to buy only the best grades. Preferably the different ingredients should be purchased separately and mixed at home. The cheapest fertilizer when bought is generally the dearest when paid for. Some use complete fertilizer, some acid phosphate alone, and others a mixture of cotton-seed meal, acid phosphate, and kainit in varying proportions. Where stable manure or cotton seed is applied, some farmers omit the cotton-seed meal. In addition to the usual applications of fertilizers at planting time, some give a top dressing of nitrate of soda after the plants are partly grown. It is not good economy to use cotton seed as a fertilizer. It should be exchanged for cotton-seed meal, as in this way a good price is obtained for the oil, which has no fertilizing value. The meal being fine, it acts more readily than the seed, which requires some time to rot. A common practice is to apply green cotton seed as a fertilizer for corn and to some extent for other crops. Very often the seeds sprout and grow for some time before they are covered. In such cases all or nearly all of the original plant food in the seed has been taken up by the young cotton plants, which have very little if any more fertilizing value than the ordinary weeds of the field.

The practice of rotation of crops is the exception rather than the rule. In a great many instances cotton follows cotton for a number of years. Again, cotton and corn alternate in an irregular way. With the two-crop system a good plan would be to grow cotton two years and corn one year. At laying-by time cowpeas should be broadcast or sown in rows through the corn. The pea stubble would add a great deal of humus to the soil and put it in better shape for the next crop. A better plan would be to plant in cotton one or two years, in corn one year, and in oats and peavines the next. By the proper rotation of crops it is possible to grow good corn without commercial fertilizers, and the quantity used for cotton may be greatly reduced, especially in case of nitrogenous fertilizers, which are the most costly. Every effort should be made to keep the soil well supplied with humus. When this is done the fertilizer problem is over half solved.

Only a few general soil adaptations are recognized. The preference shown for the sandy lands is not due to any special adaptation of the soils, but merely to the fact that they are more easily handled. It is known that the clay lands are better adapted to cotton than to corn. The tendency with every farmer is to grow the general line of crops regardless of the kinds of soils in his farm.

Peach trees grow well on the sandy lands, but they do not bear regularly enough to justify an extension of the industry.

The average farm in Anderson County contains from 100 to 500 acres, but there are a few holdings of more than 1,000 acres. At least

a part of each large plantation is rented, generally to negroes, in tracts of 25 to 75 acres. According to the Twelfth Census the average size farm is 64.8 acres, but each tenancy was tabulated as a farm and the individual holdings average much more than the figure stated. Only about 25 per cent of the farms are operated by the owners.

Land is rented in a number of ways. If the system of "share cropping" is followed, where the owner furnishes the land and fertilizers, he usually gets half the crop, but if only the land he gets a third or fourth. A popular plan is to rent a house and so many acres of land for a stipulated amount of lint cotton, ranging as high as 3 bales for a one-horse farm. Cash rents range from $2 to $6 an acre, depending upon the character of the land and nearness to town. A large part of the labor is absorbed in the tenant system. Where hired by the day farm hands receive from 50 to 75 cents, and by the month $10 to $15, with board or house and rations.

Land values have been rising for several years, and it is not at all likely that they will ever be as low again as they are now. The leveler areas are held at $25 to $100 an acre, depending upon the desirability of location. Some of the very rolling areas can be bought for $10 to $20 an acre.

With the growing scarcity of labor the farmers are finding it necessary to confine their efforts to smaller areas than heretofore. The lands that can not be kept up are either rented or abandoned. Better conditions could be brought about by better agricultural methods. More attention should be given to forage crops and pasturage, which do not require a great deal of labor. The section is admirably adapted to the production of cattle, sheep, and hogs, and these animals command good prices in the markets. This line of farming would not only lead to a substantial prosperity among the farmers, but would also afford a cheap and efficient means of keeping the soils in a productive state. More intensive farming would be practicable if a good class of immigrants could be obtained and were allowed to take up lands in small tracts of 25 to 50 acres, or possibly as much as 100 acres each. The immigrant farmer and his family could do nearly all the work on such an acreage, thus affording a solution of the labor problem.

When the farmers in general become wider awake to the fact that the growing of cotton is practically the only money crop and that having to buy a large portion of the necessaries for home use can not lead to any substantial prosperity, a long step will have been made toward better conditions. As it is now the tenants and a large portion of the smaller landowners have to operate on a credit basis, buying fertilizers, most of the food and clothing, and with a great many the horse feed on credit, being forced to sell their cotton in the early fall at the lowest prices to meet their obligations. By growing

as much as possible of the necessaries, and the section is admirably adapted to this line of farming, the liens to the merchants could be greatly reduced or entirely dispensed with. Then the cotton could be held for sale as the market conditions justified. The acreage devoted to cotton should be kept in a state of higher productiveness, so as to get profitable yields. A half bale or less per acre is not profitable at any reasonable price for the crop. The landlords can well afford to encourage thriftiness among their tenants from purely a business point of view.

SOILS.

The soils are representative of the Piedmont Plateau region of the State, although perhaps less varied in character than in any of the other counties. They fall naturally into two general groups, namely, the residual, including all of the uplands, and the alluvial, including the overflow strips along the creeks and rivers.

The upland soils have been formed in place by the disintegration and decomposition of the underlying rocks, which are of a highly crystalline nature. By far the most extensive of these is a gray medium-grained gneiss, consisting of orthoclase and plagioclase feldspars, quartz, muscovite and biotite mica, and hornblende, named in the order of their importance. In places there is a gradation from the typical gneiss into a mica schist or highly micaceous schisty gneiss, also into a dark hornblendic gneiss. Then again it gives way locally to a gray massive granite of a more siliceous character and lower in iron-bearing constituents. All of these variations have an important bearing upon the resultant soils. As the parent rock becomes more siliceous or acidic in its properties the tendency is more toward light-gray sandy soils with yellow to yellowish-brown sandy clay subsoils. On the other hand, those with a greater proportion of iron usually weather into brown to reddish-brown soils with red clay subsoils. Sometimes the difference in color is due entirely to drainage. Where there is the slightest amount of seepage, although hardly perceptible, the color will usually be gray and yellow instead of brown and red. These differences in color, whatever may determine them, have quite an influence upon the agricultural value of the land. Hence to cover the broader differences based upon color two groups or series of soil were recognized. The gray soils with yellow or yellowish-brown subsoils constitute the Durham, and the brown to reddish soils with red subsoils belong to the Cecil series.

The majority of the granitic areas and local spots of the more massive phases of the gneiss give the Durham sandy loam, which is the only member of the series recognized in the county. The Cecil sandy loam is the typical upland type from the gneiss. The Cecil clay in its most extensive development is an erosion type found

through what originally were unbroken Cecil sandy loam areas. Smaller areas here and there are from some of the heavier phases of the gneiss, which weather only into heavy soils. Where erosion has been excessive, as in places along the rivers, are found areas of the Cecil stony sandy loam.

The alluvial lands are very limited in extent and of such a mixed nature that they were all grouped under the term Meadow.

Including Meadow, five types of soil were recognized and mapped. The name and extent of each are given in the following table:

Areas of different soils.

Soil.	Acres.	Per cent.
Cecil sandy loam	245,568	55.0
Cecil clay	164,032	36.8
Meadow	19,904	4.5
Cecil stony sandy loam	9,024	2.0
Durham sandy loam	7,552	1.7
Total	446,080	.....

CECIL SANDY LOAM.

The soil of the Cecil sandy loam, 4 to 8 inches deep, is a brownish-gray to brown medium-textured sandy loam. Angular quartz fragments in varying quantities are strewn over the surface and mingled with the soil, but except in very small areas the quantity present is not sufficient seriously to interfere with proper methods of cultivation or to render the soil unduly droughty, being very negligible in most areas. From the soil there is a rapid change into a red clay of a rather sandy nature, which extends to a depth of several feet. The clay is friable near the surface, but becomes somewhat heavier and more compact to a depth of 3 to 5 feet, thence it gradually changes to a lighter color, becomes less plastic, and finally passes into soft, weathered material which in an undisturbed condition has much of the original gneissoid structure of the parent rock. Quartz veins from 1 to 3 or 4 inches thick are of frequent occurrence through the subsoil, and occasionally some much thicker veins reach the surface at various angles.

In nearly every field are local clay areas or "gall spots," produced by erosion, the same agency also being responsible for some of the other modifications in the type, including an extensive shallow phase. Probably the least desirable phase is found in small spots here and there on some of the most prominent knolls and steeper hillsides, where the parent rock is not weathered to any great depth below the

surface. Here ledges and loose fragments of a porous rotten stone occur in the subsoil, and fragments of the same material, along with the usual quantity of quartz, are found strewn over the surface. The soil is a reddish-brown sandy loam 4 or 5 inches deep and the subsoil, apart from its stone content, is a deep-red clay, differing little from that in typical areas. This phase is sometimes referred to as "rotten stone land." Some areas of the type where the sandy covering is deepest are referred to as "sandy land," in contradistinction to the shallower phases, with a brown and slightly heavier soil, and others with a tinge of yellow in the lower soil and upper subsoil are often called "mulatto lands," all such designations representing differences either in color or texture.

The type responds readily to any good system of management, and with the exception of the roughest stony areas is easily handled. The rolling topography and shallow soil of the "rotten stone" phase cause most of the rainfall to run off at the surface, and what is absorbed rapidly disappears in the porous rock below. As a consequence the soil is too droughty to produce good crops unless the rainfall of the growing season is well distributed. Even in the best areas the soil needs to be kept better supplied with humus, so as to make it more loamy and increase its capacity for absorbing and retaining moisture.

The Cecil sandy loam occurs throughout the county, although much more extensively in some sections than others, depending upon the topography. It usually occupies the ridges and gentler slopes, while along most of the streams of any size where the topography is quite rolling it generally gives way to the Cecil clay, which is largely an erosion type. Some of the most extensive areas are found around Belton and Honea Path, and to the north and northwest of Anderson, forming a broad belt from the Pickens County line on the northwest to the Abbeville line on the southeast. Another irregular belt of considerable extent follows the ridge between Big Generostee Creek and Rocky River south of Anderson, and most of Fork Township, in the western corner of the county, is sandy. The drainage of the type is perfect and all but the levelest areas are subject to more or less erosion.

The Cecil sandy loam is a residual soil derived from a gray gneiss or gneissoid granite composed of orthoclase and plagioclase feldspar, quartz, and muscovite and biotite mica, named in the order of their importance, besides some minor associated minerals which have no appreciable bearing upon the character of the soil. The typical soil is derived from the more massive rocks, while those inclined to be highly micaceous and schisty usually weather into a somewhat heavier soil. Some of the small areas of "rotten stone land" are

merely the result of erosion. Others follow out a certain phase of the gneiss, high in iron, which at a certain stage of weathering leaves the quartz grains cemented together with oxides of iron into a soft, porous stone.

The timber growth consists mainly of shortleaf pine, Spanish, red, white, and post oak, and an undergrowth of dogwood. A very large percentage of the type is cleared. There are not many so-called worn-out or abandoned areas.

The Cecil sandy loam is a very desirable soil for general farming purposes and well adapted to a number of crops not now grown. It is quite probable that a good grade of tobacco can be grown, as the type is used extensively for this purpose in North Carolina and Virginia. In Georgia, where the climatic conditions are most favorable, it is highly prized as a peach soil. A few orchards have been started around Anderson and at other points near the railroad, but none of them have been attended with satisfactory results. The uncertainty of profitable crops on account of spring frosts no doubt will prevent any further extension of the industry, especially as long as cotton continues to bring attractive prices. At the time of the survey some of the orchards were being destroyed to give room for other crops. Stock raising and dairy farming are two promising industries that are not followed on a commercial scale, except by a few for local trade. Cotton and corn are the main crops. Oats are grown at least to a limited extent by a majority of the farmers, and with a few wheat is made one of the important crops, the former being grown almost exclusively for home use. Among other crops for home consumption are sorghum for both sirup and forage, sweet potatoes, cowpeas, and miscellaneous vegetables. Little or no attention is given to the growing of grasses for hay. Canning tomatoes and sweet potatoes for the market is practiced on a small scale by a number of farmers, and they are finding it very profitable. Apples, pears, plums, cherries, and several of the small berry fruits do well, and should be found on every farm.

The average yield of cotton is slightly over one-third bale, of corn about 10 bushels, and of wheat about 7 bushels per acre. The prevailing low yields are due to lax methods of culture rather than to the unproductiveness of the soil, as the best farmers make a bale or more of cotton per acre and at least treble the average yield of corn, wheat, oats, and some of the other crops. Commercial fertilizers are freely used, especially with the cotton crop and very often without the application of any rough manures.

The soil needs deeper and more thorough tillage than is now generally practiced, and a system of rotation should be followed that would keep the soil well supplied with humus. By plowing slightly

deeper at each breaking of the land and working a small proportion of the underlying clay into the sandy material the soil not only would become deeper and more loamy, but less subject to erosion and much more drought resistant, and also, as the clay content of the soil is increased, it will better retain humus and commercial fertilizers. Areas that can not be properly protected from erosion should be devoted to pasturage, sowing Bermuda or some other grass that will make a tough sod and at the same time provide good grazing.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Cecil sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20967	Soil	5.0	19.7	10.3	29.9	14.2	12.1	8.7
20968	Subsoil	1.3	8.1	5.4	13.3	3.9	15.7	52.0

CECIL CLAY.

The Cecil clay to a depth of 3 to 6 inches consists of a red, slightly loamy clay to reddish-brown loam, underlain by a deep-red clay, stiff and heavy, although containing a considerable quantity of sand. The clay extends to a depth of 3 to 10 feet without much change in color or texture, thence downward it grades into a lighter color and becomes less plastic, finally giving way to the parent rock in various stages of decomposition. In places soft weathered material extends to great depths, while in others the transition from clay to solid rock is more rapid and layers of partially weathered stone are often found up near the surface. Varying quantities of quartz and other stone fragments are strewn over the surface, but except locally there is not enough materially to change the properties of the soil.

The Cecil clay, or "red land" as it is commonly called, is an extensive type occurring in all sections of the county, mainly on the valley slopes, where the topography is quite rolling. Some of the streams are skirted on both sides by continuous strips extending back to the brow of the slopes. Again it occurs in discontinuous strips shifting from side to side of the streams with the rougher topography. There are also numerous small areas along the crests of the ridges, either occupying slight prominences or eroded slopes. The natural drainage of the type is perfect, and in fact so much of the rainfall runs off at the surface that an immense amount of damage is done by erosion, having already reduced an extensive acreage to a state of worthlessness under the present system of agriculture.

As suggested by the mode of occurrence of the type, it is largely the result of erosion through what were originally Cecil sandy loam areas. Depending upon whether all or only a part of the sandy covering has been removed, the soil varies from claylike to loamy in its properties. A phase of limited extent, which is somewhat heavier than the general run of the type, represents the original soil from a dark hornblendic gneiss. One of the largest areas of this phase extends from Eighteen Mile Creek to Twenty-six Mile Creek, passing just south of Pendleton. Smaller areas are found in different parts of the county.

The principal tree growth consists of shortleaf pine and a variety of oak. A noticeable feature is that the pine is considerably more scrubby than on the sandy loam areas.

The Cecil clay is farmed to about the same extent as the Cecil sandy loam and by some it is considered the better soil. Taken as a whole, however, the latter type is considered the safer soil, because crops on it are not so much affected by droughts as on the Cecil clay. This difference is due more to cultural methods than to any characteristic of the soil itself. Even though the soil does not contain much humus if plowed deeply so as to form a deep root zone for the plants, it will tide crops over long droughts without any serious injury. The more level areas, which are also the least stony, are preferred. With the introduction of heavier and better types of plows the desirability of the clay land is beginning to be more generally recognized. Heretofore the sandy lands have been held in higher esteem because of the greater ease with which they could be tilled.

The system of farming on the clay lands is nearly the same as on the sandy lands, cotton and corn being the main crops. Wheat and oats are grown in a limited way, as well as a few other crops of less importance. Cowpeas are not grown extensively, either to improve the soil conditions or to supply forage, although this is a very valuable crop for both purposes. The usual yield of cotton is less than one-half bale and of corn from 10 to 25 bushels per acre. Where the soil is well prepared and properly fertilized it yields a bale or more of cotton and 25 to 40 bushels of corn. The principal needs of the type are terracing to check erosion, deep, thorough plowing and the supplying of humus. The present plan of growing cotton and corn continuously on the same tracts or alternating with each other irregularly should give way to a systematic rotation of crops in which grains, grasses, cowpeas, and clover are included. A system of farming that would prove more profitable would be the raising of hogs and cattle and also, as far as market conditions warrant, dairying. Under this system only the best areas will be used for corn, wheat, and forage crops, and all of the rougher areas for pasturage.

The following table gives the average results of mechanical analyses of fine-earth samples of the soil and subsoil of this type:

Mechanical analyses of Cecil clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20971, 20973.....	Soil.....	3.9	16.4	10.3	25.0	7.1	17.3	19.9
20972, 20974.....	Subsoil.....	4.1	9.1	4.6	9.3	3.6	14.0	55.2

CECIL STONY SANDY LOAM.

The surface 5 to 7 inches of the Cecil stony sandy loam consists of a brown sandy loam or loam carrying from 20 to 50 per cent of partially weathered fragments of gneiss and varying quantities of quartz rock. The gneiss fragments occur mostly in flat flakes or slabs and range from small particles to pieces several inches in diameter. The rock is usually highly micaceous. The subsoil to a depth of 3 feet varies from a red stony clay to a brownish loamy material consisting of soft weathered rock and clay mixed. The clay may rest directly on the solid bed rock or may pass first into a soft layer and then into unweathered rock a little lower down. The type is rather droughty and hard to till on account of the large proportion of stone it contains.

This type occurs principally in the country of rougher topography along the rivers. The largest areas mapped are found in the fork of the Tugaloo and Seneca rivers, and just across the Seneca, extending some distance down the Savannah River. Another area of considerable size occurs farther up the Seneca River, near the mouth of Eighteen Mile Creek. Some small areas occur along the Saluda River and in other places where the topography is roughest. Along the Savannah and Seneca rivers as far back as the headwaters of the small lateral streams are numerous areas of stony loam which on account of their small size could not be shown on the soil map.

As would be inferred, the Cecil stony sandy loam is of the same origin as the Cecil sandy loam and the Cecil clay and owes its difference to erosion. The timber growth is about the same as on the other types.

The areas under cultivation are devoted mainly to cotton and corn, which generally give light yields. The usual yield of cotton is about one-fourth bale and of corn between 5 and 10 bushels per acre. A better use for the type would be to sow Bermuda grass for pasture. The roughest areas should remain timbered, or where already cleared should be sodded to Bermuda grass to check further erosion and at the same time convert them into good pasture land. Areas near the

railroads, if not too steep and stony, could be used to advantage for grapes, peaches, apples, and pears.

The results of mechanical analyses of the fine-earth samples of the soil and subsoil of this type are given in the following table:

Mechanical analyses of Cecil stony sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20975	Soil	11.5	25.8	8.6	18.3	3.8	19.8	12.4
20976	Subsoil	5.2	15.0	7.0	14.4	6.4	14.0	37.9

DURHAM SANDY LOAM.

The surface 4 to 6 inches of the Durham sandy loam is a gray loamy sand or light sandy loam low in humus and generally carrying small quantities of angular quartz fragments. Below the soil is a pale-yellow sandy loam extending to a depth of 12 to 18 inches, where it grades into a yellowish-brown sandy clay. In some areas the clay is solid in color to a depth of several feet, while in others it is mottled to some extent with red and brown iron stains. In small spots affected with considerable seepage it is mottled gray or chalky white. At a depth of 2½ to 3 feet the subsoil becomes compact and rather plastic, but nearer the surface it is sandier and more friable.

The Durham sandy loam has a very limited extent in Anderson County, although in some counties of the Piedmont section it is one of the important types. The largest areas mapped are at Crayton and Townville, in Martin and Fork townships, respectively. Other small areas occur in different parts of the county, mainly through the large bodies of Cecil sandy loam. Its principal occurrence is on the crests of ridges with almost level surface features, but some of the small areas are found bordering streams, either in the slight depressions at their sources or farther down as gentle slopes. Except for the small seepage spots referred to above, the natural drainage is very good, although on the whole not as perfect as that of the Cecil sandy loam. On the other hand, it is somewhat more leachy and droughty than the Cecil sandy loam on account of the greater depth to clay.

The Durham sandy loam is a residual soil derived from granites and gneisses. The area at Crayton is derived largely from a gray medium-grained granite, as is also probably true of the one at Townville and some of the smaller areas on the ridges elsewhere. Others are of essentially the same origin as the Cecil sandy loam, owing their difference to a slightly less perfect state of drainage and the absence of erosion.

The original timber growth consists of shortleaf pine and oak of different varieties, much the same as on the Cecil sandy loam. Areas allowed to reforest themselves generally grow up to scrub pine.

Most of the type has been brought under cultivation and is used almost altogether for general farming. Cotton and corn are the main crops, and unless the land is in a good state of cultivation the yields are light. The type is too sandy for general crops and should be used largely for special purposes. It is adapted to the growing of bright-leaf tobacco, watermelons, cataloupes, sweet potatoes, Irish potatoes, and a variety of vegetables which could be grown both for the local market and for canning purposes. Grapes and several other fruits do well.

Where general farming is followed, instead of planting this soil continuously to one crop, as is so often done, a definite rotation of crops should be practiced. A rotation that could be followed to advantage would be to plant to cotton the first year and to corn the second. Follow the cotton in the fall with rye, to serve as a cover crop and to provide winter pasturage. Plow this under in time to prepare the land for corn in the spring. Rye should follow corn the second year and be allowed to mature a crop the next summer, broadcasting after this a crop of cowpeas, which would produce a heavy crop of forage. Cowpeas should be planted between the rows of corn and between every other cotton middle, using for the latter purpose a bush variety. A rotation of this kind would not only give larger returns, but would at the same time put the soil in better shape for each succeeding crop. Without a fair amount of humus in the soil commercial fertilizers rarely ever give satisfactory results. It will be found that the Williamson plan of growing corn will give better results on this type than on any of the heavier soils of the county.

MEADOW.

Meadow includes all of the bottom or alluvial lands of the county. Narrow bottoms are found in places along the rivers, and nearly all of the creeks and smaller streams have overflowed strips varying from a few yards to a quarter of a mile wide, many being too narrow to show on the soil map. In the river bottoms the soil varies from a brownish-gray sand immediately along the banks to a brown fine sandy to silty loam next the slopes. Some areas were originally a good loam, but have since been covered with loose sand, rendering them almost worthless. Others are quite sandy beneath and loamy on top. The creek bottoms vary more widely still. The original soil was for the most part a brownish or black sandy loam to loam, but the floods of recent years have covered the older soil in many places with loose sand. Now in these areas there is a mixture of loamy and sandy spots, even in very small areas. Generally the narrower bottoms are the sandiest and most subject to changes with every overflow.

In the early settlement of the section the bottom lands were highly prized for the production of corn and forage crops. Then overflows were not very frequent and rarely destroyed the crops; but as more and more of the uplands were cleared floods became correspondingly more frequent and disastrous, until now the cultivation of the bottom lands is considered very risky. Large quantities of sand have been washed in from the adjacent slopes, badly obstructing the streams and rendering the soil of little value. Some of the creek bottoms are badly waterlogged throughout, while others show this condition only in places. Wet areas that were once under cultivation but now abandoned usually support a growth of willows, rushes, and water-loving grasses. The river bottoms are fairly well drained except for overflows, but on account of the frequency and uncertainty of high water, only a limited acreage is under cultivation, the others being abandoned or used for pasture. The areas cultivated are generally devoted to corn, and if the seasons are good the yields are heavy.

The bottom lands in the adjoining county of Oconee were mapped as the Congaree fine sandy loam, but on the whole they are more uniform in texture, better drained, and more desirable for agricultural purposes. Very likely they are much more variable now than when the survey was made in 1907, as a result of the high flood of the following year (August, 1908).

While the bottom lands have been growing less desirable every year and are not now as generally farmed as formerly, the worst of them are not beyond the possibility of reclamation, at least to the extent of making good pasture lands. With all of the hillsides properly terraced, the volume and destructiveness of the floods would be greatly lessened. Erosion of the slopes would be at the same time checked and the deposits of sand in the bottoms decreased. With this accomplished and ditches provided along the foot of the slopes to cut off seepage waters, the conditions would be greatly ameliorated. Nearly all of the streams need to be kept cleared of trash, growing bushes, and other obstructions.

SUMMARY.

Anderson County, with an area of about 697 square miles, lies in the Piedmont section of South Carolina. The topography is generally rolling. There are many streams flowing in deep, narrow valleys with little or no overflow lands. The general elevation of the ridges ranges from 750 to 1,000 feet and of the valleys from 700 to 800 feet above sea level.

All sections of the county are fairly well settled with a mixed population, negroes constituting the majority of the tenants and farm hands.

The county has an extensive system of public roads. The railroad facilities are fairly good and afford quick service to all points north, south, and west. Anderson, population about 12,000, is the county seat and chief marketing center. Belton, Honea Path, Williamston, Pelzer, Piedmont, Pendleton, and Iva are smaller towns commanding considerable trade. In the county are 19 cotton mills, which consume a large part of the cotton produced locally.

The climate is mild and adapted to a great diversity of crops. The growing season ranges from seven to seven and one-half months long, or some two to three weeks shorter than in the Coastal Plain section of the State. The average rainfall is slightly over 51 inches a year.

Cotton occupies an acreage greater than that of all the other crops combined and twice that of corn, the crop next in importance. The farms contain from 100 to 500 acres, with some holdings of over 1,000 acres. The tenant farms range from 25 to 75 acres, rarely more. Much of the farming is done on a share basis by tenants, who pay one-fourth to one-half the produce for the use of the land. Cash rents range from $2 to $6 an acre.

Day laborers get from 50 to 75 cents a day and laborers by the month $10 to $15 a month, with board or rations and a house. The present tenant system absorbs a very large portion of the available labor.

The price of farm land is increasing. The best lands sell for $25 to $100 an acre. Some of the rougher areas can be bought for $10 to $15 an acre.

The soils fall naturally into two general groups, the alluvial soils, which are very limited in extent, and the residual soils, including all of the uplands. The residual soils have been formed in place by the decay of the underlying rocks, consisting of gneisses, schists, and massive granites.

The Durham series includes all areas with gray soils and yellow subsoils, and the Cecil series the brown to reddish soils with red subsoils.

The alluvial soils being complex in arrangement and in a wet condition were grouped under the term Meadow. Including Meadow as a single type, five types of soil occur in the county.

The Cecil sandy loam is the most extensive and best developed type. It produces good crops of cotton and corn and is equally as well adapted to a variety of other crops not now grown. Stock raising and dairying are industries that should be developed. The soil needs more humus, and deeper and more thorough tillage.

The Cecil clay is also an extensive type used largely for general farming. It produces cotton and corn about as well as the Cecil sandy loam. The type is better adapted to cotton than to corn.

Properly handled, it produces good crops of wheat. It is the best grass land in the county and a great deal of the type should be devoted to pasturage. All cultivated areas should be terraced.

The Cecil stony sandy loam is limited in extent. Cotton and corn are the main crops, and these generally give unsatisfactory yields. It could best be used for pasture.

The Durham sandy loam is a light sandy type, especially adapted to the growing of bright-leaf tobacco, sweet and Irish potatoes, cantaloupes, watermelons, and a variety of other vegetables. The type is now used mostly for corn and cotton, and the yields as a rule are not satisfactory.

The soils included under the term Meadow are naturally very productive, but the frequent overflows make crops very uncertain. The areas can be used to best advantage for pasture and hay.

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U.S. DEPT. OF AGRICULTURE
BUREAU OF SOILS
MILTON WHITNEY, CHIEF

SOIL MAP

SOUTH CAROLINA
ANDERSON COUNTY SHEET

SOIL PROFILE
(3 feet deep)

Cecil stony sandy loam
St
C

Cecil sandy loam
St
C

Cecil clay
Cl
C

Durham sandy loam
St
St
Sc

LEGEND
St Sandy loam
C Clay
Cl Clay loam
Sc Sandy clay

LEGEND
Cecil stony sandy loam — Cs
Cecil sandy loam — C
Cecil clay — Cc
Durham sandy loam — D
Meadow — M

Soils Surveyed by W.E. McLendon. 1909

Scale 1 inch = 1 mile

Field Operations Bureau of Soils 1909

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